

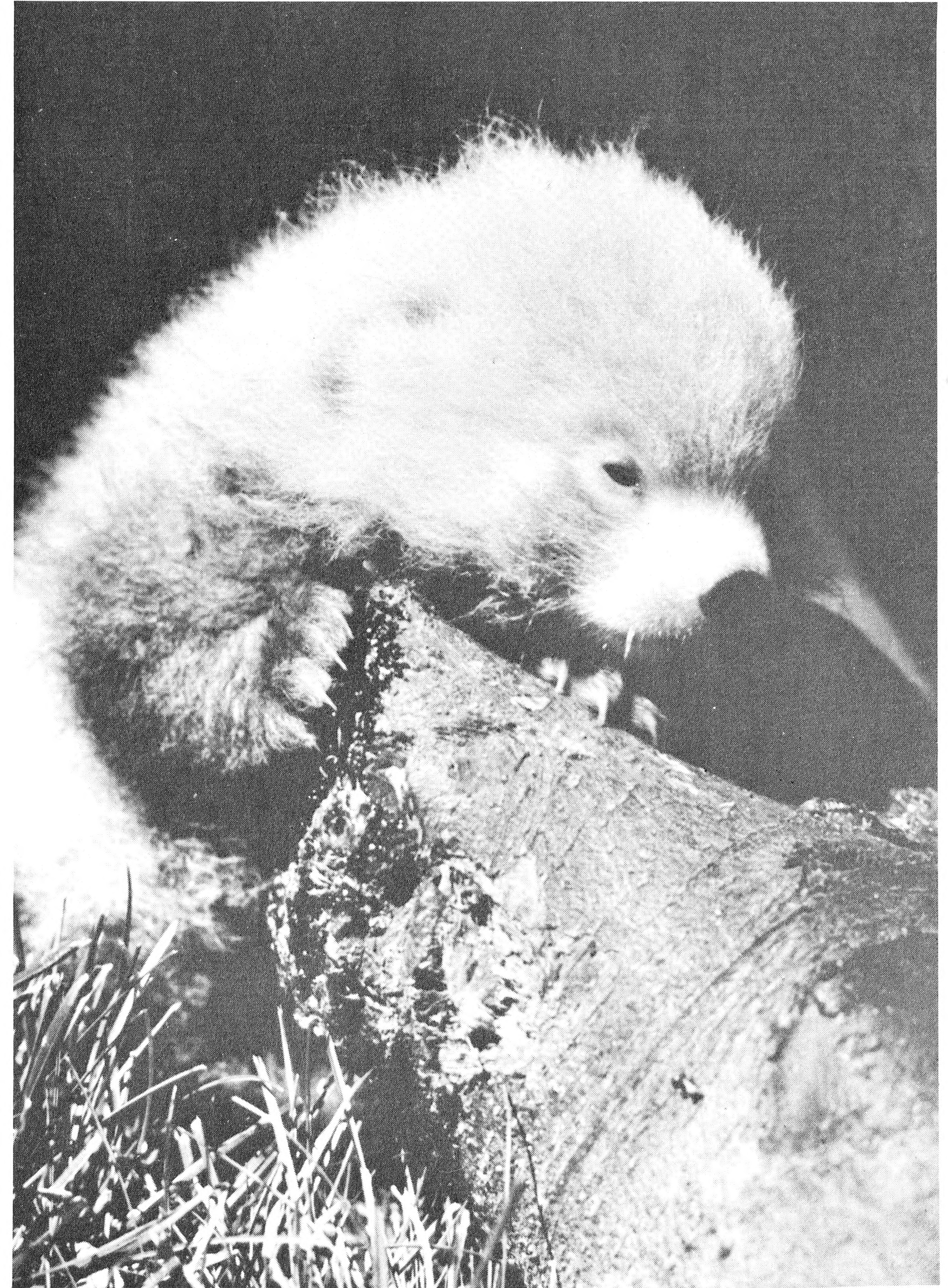
THE ZOO GOER

M.
WINSLOW

Volume 1, Number 3

August/September 1972

Price .35



Published by the Friends of the National Zoo



Published by
 Friends of the National Zoo
 National Zoological Park
 Washington, D.C. 20009

Phones:
 Executive Director and membership:
 232-4500
 Educational and Editorial offices:
 232-5500
 Guided tours: 332-9322
 Window Shop: 232-4555

FONZ Board of Directors 1972-1973

Peter C. Andrews, President
 Theodore Babbitt, 1st Vice President
 Emanuel Boasberg, Treasurer
 Susan K. Semple, Secretary
 Arthur W. Arundel
 Mrs. Huntington Block
 Montgomery S. Bradley
 John S. Brown
 Mary H. L. Clark
 Timothy V. A. Dillon
 Donna K. Grosvenor
 Stephen Hosmer
 Joan L. Jewett
 Robert Mason
 Isabel J. McDonnell
 Shirley J. McNair
 Lavelle Merritt
 Ruth N. Nelson
 John B. Oliver
 Mary Poole
 Nancy Porter
 Gerald G. Wagner
 Rosa M. Walker
 Richardson White, Jr.

Executive Director
 Warren J. Iliff

Editor: Austin Hughes

Design and Production by Tom Jones

Cover photo and photos on pages 3 and 4 by Donna Grosvenor. All other photos by Tom Jones.

Director, National Zoological Park;
 other photographs by Mark Gordon.

THE ZOOGOER is published bi-monthly
 and copyrighted© by Friends of the National
 Zoo, c/o National Zoological Park, Washington,
 D.C. 20009. second-class mailing permit
 approved at Washington, D.C. Rate
 in the United States \$3 a year. Vol. 1, No. 2.

CONTENTS

3 Lesser Panda Cubs

Zoo News

6 Mammals

10 Birds

12 Zoo Map

Zoo News

16 Reptiles and Amphibians

17 Gelada Baboons

THE ZOOGOER

THE ZOOGOER is a new bi-monthly publication
 of the Friends of the National Zoo and replaces
 the quarterly publication, *Spots and Stripes*. With
THE ZOOGOER, the Friends hopes to provide
 for its membership an up-to-date report on new
 animals and exhibits at the National Zoological
 Park and in-depth articles on the natural history
 and behavior of animals at the Zoo. All of the text
 and photographs will be keyed to the centerfold
 map in hopes of making a trip to the Zoo a more
 interesting, educational, and enjoyable adventure.
THE ZOOGOER will also be on sale at the Friends'
 Window Shop and kiosk as a current guide to
 points of interest at the Zoo.

Friends of the National Zoo

is a non-profit organization of individuals and families who regularly visit the National Zoological Park in Washington, D.C.

Membership in the FRIENDS allows you many benefits that will make your zoo-going more enjoyable and educational.

The membership of the FRIENDS supports and provides volunteer services to the public and the Zoo through such activities as Tour Guiding for public school classes, free information booths on the Zoo grounds, maternity watches for pregnant Zoo animals and Financial support for wildlife conservation and scientific research from the profits of its Window Shop, Kiosk, Balloon Booths and Trackless Train operations.

Your Membership

in the Friends of the
National Zoo Gives you:

a year's subscription to
the bi-monthly maga-
zine, "THE ZOOGUER",
a news and animal fea-
ture guide to the Na-
tional Zoo with a cur-
rent centerfold map that
is keyed to all the text
material for orienting
your next zoo-going
trip.

an invitation to the
Spring Annual Meeting
in the Elephant House
and the Annual ZOO-
NIGHT on the Zoo
grounds for picnicing,
free beverages, baby an-
imal exhibits, free
trackless train rides,
music, special attract-
ions and fun.

discounted tickets to
the annual Winter Lec-
ture Series.

free admission to the
annual Fall Film Series
discounts at the Friend
Window Shop and
Kiosk.

an opportunity to be a
volunteer Tour Guide
leading students through
the Zoo; to be a preg-
watcher monitoring Zoo
animals that are about
to give birth; to assist
the Friends at their
Window Shop or in
their office with mail-
ings, typing, etc.

Lesser Panda Cubs



This photograph of an earlier National Zoo lesser panda cub shows what the latest cubs look like. It was not possible for us to photograph the newborn lesser pandas without unduly disturbing them.

Late in the night of June 21 or in the early morning hours of June 22, while a steady downpour covered Washington and floodwaters from Rock Creek spread over parking lots in the lower Zoo, the National Zoo's female lesser panda gave birth to a litter of two in the hollow trunk of a tree in the lesser pandas' outdoor enclosure (*number 16 on map*). For several previous days, the mother had been gathering twigs and leaves from around the enclosure, taking straw

bedding from inside the lesser pandas' log cabin, and carrying these materials into the bottom of the hollow tree, where she was evidently building a nest. So Zoo officials were not taken totally by surprise when the young were first observed on the morning of the 22nd. For the next several months, the lesser pandas were guaranteed to be one of the major attractions at the Zoo, and everyone had to admit they had stolen some of their giant relatives' thunder.



Lesser panda in the branches of the tree in their enclosure (*number 16 on map*).

At birth the infants' fluffy fur was a uniform tannish white. Their eyes were closed, and they were quite helpless. Interestingly, the areas beneath the eyes where the "mask" or "tear-marks" of russet fur are placed in the adult had no fur on them, and the pattern of the future mask was traced by streaks of bare pink skin. The soles of their feet — which in the adult are entirely covered with fur, differentiating it from the giant panda and in fact making it unique among non-arctic mammals — were also bare and pink. The tail, which in the adult is nearly as long as the rest of the body, was short and fat, accounting for only about a fourth of the animal's total length.

Feeling that the mother might prefer a more spacious nursery than the tree trunk, keepers placed a large, flat straw-filled nest-box next to the tree. In subsequent days, the mother was frequently seen moving the young back and forth from the tree to this nest-box to the log cabin, carrying them one by one in her mouth, and even sometimes placing one on the grass or carrying one up into the tree. It was obvious that she was agitated, doubtless by the proximity of Zoo visitors; and, as she might do if she felt her young were in danger in the wild, she was moving them constantly in search of a den that seemed secure to her. Consequently, on Tuesday the 27th, a wide area around the

lesser pandas' compound on the side from which the tree opening is visible was roped off. Soon the mother panda, no longer afraid for their safety, settled down with her young inside the hollow tree.

From then on she spent most of her time with her cubs, emerging at the lesser pandas' 8:15 a.m. and 3:30 p.m. feeding times and a few other times during the day. When the cubs were born, the nest consisted of a tightly packed platform of leaves and straw in the bottom of the trunk opening on which the infants rested. Since then, the mother had been gathering more materials and had built up around this platform, covering the opening to the den with leafy branches except for a small hole at the top.

The tree is hollow up to a height of about seven feet, where there is another jagged opening, about a foot wide, at right angles to the hole at the base of the trunk. Since she had walled up the lower opening, the female had to climb up the inside of the trunk and out this other hole when she wanted to leave the nest. She then would climb farther up the tree, where her mate usually sat in complete indifference to the changes taking place beneath him, if she wanted to sun or relax like him in the branches of the tree. Or, if she wanted to visit the ground — as she would do at feeding times or when she

wanted to gather more nesting materials — she would climb down head first along one of the branches that are propped up against the trunk of the tree.

For the first week or so, the cubs had a high-pitched shriek which they used to call their mother. Once they gave this call when she was sitting in the upper branches of the tree, and she climbed down to them for a few minutes, then left again. They almost immediately began calling her again; and she soon climbed back down, this time to stay.

A hollow tree is reported to be a favorite denning place for lesser panda mothers in the wild as well as in captivity. Interestingly, the giant panda — which is believed to be more closely related to the lesser panda than it is to any other living animal — may share this habit, since a number of very young giant pandas have been found in similar hiding places in the wild. In the giant panda, too, the young are blind and quite helpless at birth. The mating that produced the Zoo's latest lesser panda offspring was not observed, and the gestation period of this species has evidently not yet been determined. As has been suggested in the case of the giant panda, there may sometimes be delayed implantation of the fertilized ovum in the uterus, resulting in variable intervals between mating and birth. Lesser panda births in captivity, however, seem to occur invariably in June or early July; this seems to indicate an annual mating season, which is believed by one authority to take place in February. Unlike the giant panda, which usually gives birth to only one cub at a time and only rarely to two, the lesser panda usually produces litters of two, although it may have only one or as many as four.

The lesser panda or red panda (*Ailurus fulgens*) inhabits Yunnan and Szechuan provinces in China, northern Burma, Sikkim, and Nepal. Like the giant panda (*Ailuropoda melanoleuca*), with which it shares the Chinese portion of its range, it inhabits bamboo forests on mountain slopes; but it is found at both higher and lower altitudes than the larger species. Its diet is also evidently more variable, and it relies less heavily on bamboo than the giant panda does. Besides bamboo, grass, roots, fruit, and acorns are mentioned as favorite foods. The lesser panda is also sometimes said to feed on birds' eggs; and some authors have stated that it may eat an occasional small bird or mammal, though it generally

refuses meat in captivity. The Zoo's lesser pandas are fed bamboo twice a day, along with a porridge of milk, pabulum, oatmeal, honey, vitamins, and raw egg. At their afternoon feeding they are also given chopped apples and bananas.

The new cubs are the first offspring born to the Zoo's female since her arrival here in June of 1971. The male, named Rishi, was a widower at that time. He had lived in Washington since 1966 and had sired four offspring by two previous mates, but unfortunately none of the cubs had lived to maturity. When a third mate was located for Rishi in the New Delhi Zoo, Indian officials went to considerable trouble to choose an appropriate name for her. "Rishi" evidently means "one who meditates in the wood"; and Mara, the name of a female demon who tried to tempt Buddha as he was meditating in the wilderness, was finally chosen for the female lesser panda. At the pair's first meeting, Mara proved less than alluring to the Zoo's lone male, who did not seem anxious to welcome an intruding female to his territory. But gradually their scrapping ceased; and, as evidenced by the recent offspring, they proved quite compatible.

After a week, the infants' undersides and legs — where the fur is black in the adult — were beginning to darken. Their tails were not ringed yet but had a noticeably grayish cast, and there was still no sign of the adult's russet tearmarks. Subsequently, coffee-colored fur began to appear on the tearmark areas, and by Saturday, July 8, these areas were fully furred, as were the soles of the infants' feet by the same date. On Monday the 10th, both cubs were found to have both their eyes open.

Until July 9, the cubs slept in close physical contact with each other, but after that they slept about six inches apart. As yet they did not move about on their own, but their mother had again taken to transferring them to the nest box and back to the tree trunk again with some frequency. At this writing, it is not known when the cubs will begin to move out into their enclosure on their own or when they will begin to eat solid food. By the time they are two and a half months old, however, they should be running around actively. With their tails distinctly ringed and their black "trousers" fully developed, they will then be miniature replicas of their parents in appearance, and in temperament still more inquisitive and playful than the adult lesser pandas.

ZOO NEWS

Mammals



The twin orangutans born at the Zoo last December 27 are now on exhibit at the Small Mammal House (*number 15 on map*).

Twin Orangutans on Exhibit

On July 8, the twin orangutans born at the National Zoo on December 27, 1971, were placed on exhibit for the first time in a glass-fronted cage directly opposite the front door of the Small Mammal House (*number 15 on map*). Named Malati and Mawar, the Indonesian words for Jasmine and Rose respectively, the twins were removed from their mother Jennie when she was unable to provide milk for them. (Jennie, the twin's father Archie, and a previous offspring, the male Atjeh, are located at the rear of the same building.) They did well at the Zoo nursery, and both now weighed over nine pounds. At the age of six months they were considered to be sufficiently independent of their human foster parents to adjust successfully to cage life.

At the Small Mammal House, the orangs, both of which are females, are bottle-fed formula three times a day, at 6:30 a.m., at noon, and at 4:00 p.m. The latter two feedings can be witnessed by the public. At this writing, they are also being fed baby custard in mid-morning, strained vegetable and chicken soup in late morning, and strained cereal, egg, and bacon in the after-

noon. For these feedings, as for the milk feedings, two keepers enter the cage and hold each of the infants in order to feed them.

As of June 27, each of the twins had six teeth, two upper incisors and four lower incisors. Soon after that date other teeth were expected to appear. (The orangutan's milk teeth are reported to erupt on a schedule very similar to that of a human baby's.) With their new teeth, Melati and Mawar are beginning to eat quite a bit of solid food. Twice a day at the Small Mammal House, cut up apples, bananas, and oranges and whole grapes are placed in the cage for the orangs to snack on; they do so frequently, reaching for food with their hands or bending down to pick it up with their lips. The second of these batches of fruit is put in the cage late in the afternoon, so that the twins will have food available if they are hungry at any time throughout the night.

Melati and Mawar sleep most of the night, huddled close to each other. In the daytime in good weather, they are taken outdoors to play, as they were when they lived at the nursery. Currently, they are outdoors from 10:30 to 11:30 in the morning and from 2:00 to 3:30 in the afternoon. Each twin is taken by a keeper to a separate play area;

they are kept separate during their play periods so that they will not become excessively dependent on each other. One twin is taken to a roped-off grassy area to the left of the front door of the Small Mammal House, while the other is taken to the area that has been roped off around the lesser pandas' enclosure (*number 16 on map*).

Outdoor play builds up the young apes' muscles while giving them fresh air and sunlight. Moreover, it fills an important psychological need by exposing them to new and varied stimulations. As yet the orangs are sometimes rather passive in play, content to cling to the keeper's hands as he rocks them up and down. But at other times they show real curiosity and interest in their surroundings, as when they manipulate objects in their cages or keepers' clothing and hair.

The development of young orangutans, like

that of other great apes, parallels human development closely for the first year of life. Like human babies, they are helpless and dependent, cry when they are uncomfortable or want food, and learn to discriminate visually and to coordinate their body movements only gradually. As in humans, the next several years are a time of exploration, learning, and increased self-confidence; and regular zoo visitors can look forward to seeing Malati and Mawar gradually become familiar with their cage and investigate the possibilities of its varied play equipment during the next several years. The orangutan of two and even three or four years is still somewhat reminiscent of a human child of the same age; but sexual maturity and full adulthood come much earlier for the orangutan — at about seven and ten years respectively.



Zebra and Wildebeest in the National Zoo's new East African Waterhole exhibit at the Small Mammal House (*number 9a on map*).

East African Waterhole Exhibit

The mixed zebra and wildebeest enclosure (*numbers 9a and 9b on map*) has become an East African waterhole exhibit. The animals were removed to other cages while a waterhole was constructed and planted around with lush vegetation. Now they have returned, and the resulting scene is a recreation in miniature of the waterholes where great

herds of these hoofed mammals intermingle in East Africa.

The wildebeest or gnus in the National Zoo's collection are white-bearded gnus (*Connochaetes taurinus albojubatus*). This subspecies is the common wildebeest of central Kenya and Tanzania. The Zoo's species of zebra (*Equus burchelli*) inhabits the same region as well as Central and West Africa. On Tanzania's vast Serengeti plains, zebra of this

species are involved with white-bearded gnus in an exciting yearly drama of migration, and the two species have evolved remarkable means of co-existing.

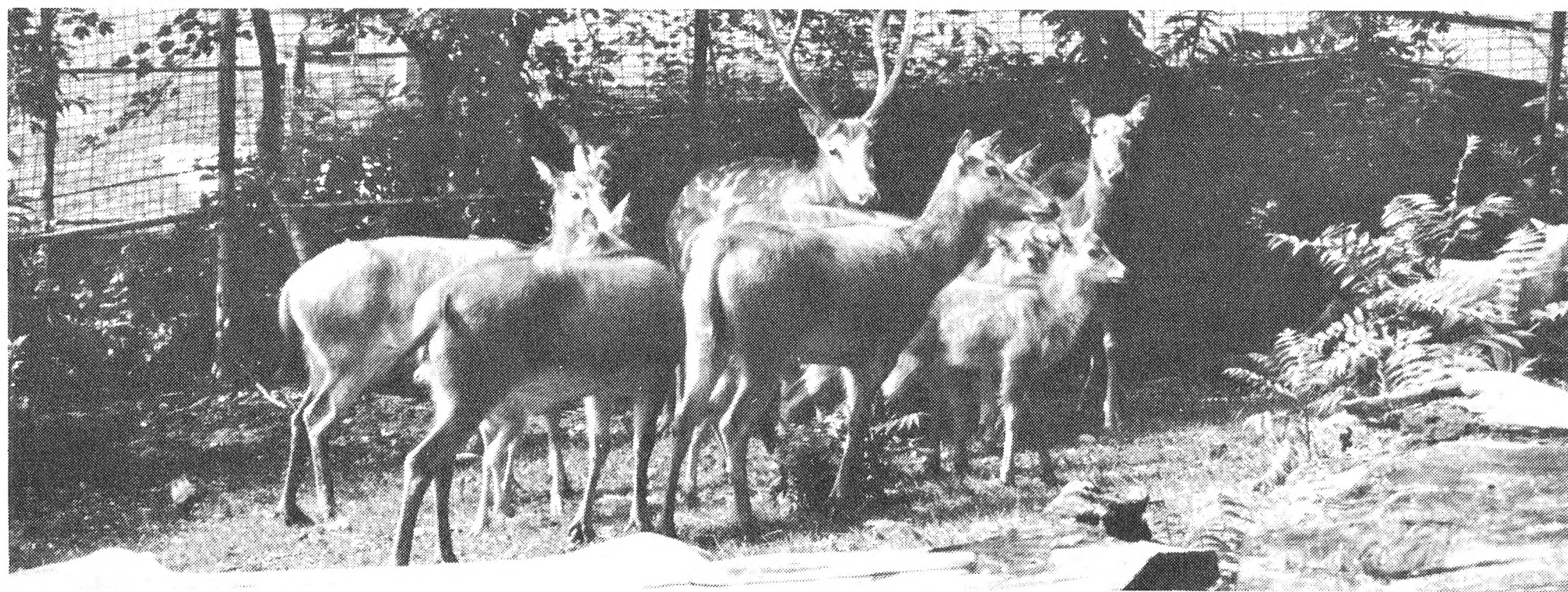
In the rainy season, from October to May, zebra and wildebeest graze together on the Serengeti. There the two species do not compete for grazing areas but in fact complement each other's feeding habits.

The wildebeest eat the taller tender grasses; the zebra, with their long incisors, follow behind and eat the grasses cropped short by the wildebeest. By May, when the rainy season ends, the plains are grazed quite closely, and the wildebeest gather in vast numbers in order to migrate to higher brush country in the west. Some of the zebras join in this migration, which stops in the brush country for a few weeks and then moves to an area north of the Serengeti where there is permanent water and shade and abundant grass. Meanwhile, the bulk of the zebra population has arrived at the same feeding grounds by a different route; when the two species meet there, scenes like the one recreated at the National Zoo — though

on a much larger scale — are quite common.

July 15 and 20, colts were born to zebra mares in the mixed display. In East Africa, most zebras foal in the rainy season; the fact that births peak at this time is clearly related to the abundance of grass to enrich the mare's milk and to feed the colts when they begin to graze on their own. In the Zoo, it is advantageous for colts to be born in warm weather. This can be arranged to happen every year, since the female zebra has a period of fertility ten days after giving birth. If she is mated then, she will give birth at the same time the following year, since the Zebra's gestation period is twelve months.

A wildebeest was also born at the National Zoo recently, in another enclosure around the corner from the waterhole exhibit (*number 9e on map*). In the Serengeti, wildebeest calves are born in January and February, and there is an annual mating season in April. At the National Zoo, the wildebeest are mated in the fall, so that births will occur in spring and early summer.



The Zoo's Père David's deer herd (*number 3h on map*).

Pere David's Deer Herd Grows

Five of the National Zoo's six adult female Père David's deer (*number 3h on map*) gave birth to white-spotted fawns in May and June. By now a uniform pale reddish brown, three of the fawns are males, and two are females. This species has bred well here since 1968, producing about a dozen offspring; but in the number of births, this year has surpassed every previous year. Père David's deer no longer exists in the wild, and it evidently has not existed in its original habitat for hundreds of years. Only carefully organized breeding programs on the part of game parks and zoos have saved it from extinction, and the National

Zoological Park is proud to be playing a role in the continuing effort to preserve these unique animals.

It is believed that the mi-lu or Père David's deer (*Elaphurus davidanus*) once inhabited the alluvial plains of northeastern China. Proponents of this theory point to the mi-lu's long, spreading hoofs, which seem to be an adaptation for life in such swampy terrain. When these areas were settled by human beings the deer were forced out; but the Chinese emperors, in one of the earliest recorded conservation efforts, saved the species in the form of a semi-captive herd in the Imperial Hunting Park in Peking. This

park was private, and for a long time no Western visitors were admitted. No Westerner suspected that it contained a rare species unknown anywhere else until 1865, when Père Armand David, the famous French priest-naturalist who later was to become the first European to collect a specimen of the giant panda, caught a glimpse of the deer over the wall and obtained two skins by bribing guards.

The first scientific description of Père David's deer was based on these skins, and the species was placed in a separate genus from any other living member of the deer family. It is a large deer, reaching a height of three feet, nine inches at the shoulder, and its long concave muzzle immediately sets it apart from other deer. There is a thick grayish winter coat, which is replaced by a much thinner and shorter reddish brown coat in the summer. The stag's antlers are unusual in that the front branch grows straight upward. Still more surprisingly, the stag grows and drops two separate sets of antlers each year, and some stags grow a rudimentary third set.

The species was once again threatened with extinction in 1900, when the Peking herd was nearly exterminated by European and American soldiers that had been sent to suppress the Boxer Rebellion. Most of those that survived escaped from the park and were killed for food by the starving populace. Fortunately, a few specimens had been acquired by European zoos towards the end of the Nineteenth Century; and in 1898, the eleventh Duke of Bedford had gathered all of these together at his estate, Woburn Abbey. There they thrived and multiplied in a 4000-acre enclosed park; and all of the approximately 450 Père David's deer in the world today are descended from the Woburn herd, including those at the Peking Zoo.

The National Zoo's current herd was first established in 1966, when the present herd stag and two of the present hinds were acquired from Assinboine Park Zoo in Winnipeg, Canada. The females were quite young at that time, having been born the same year at Winnipeg; the male was born in 1957 at Chicago's Brookfield Zoo. Offspring have been born here in 1968, 1970, and 1972. Some of them have been sent to other zoos involved in the worldwide effort to preserve this species; usually it is males that are sent out, since one male is able to mate with a number of females. Four of the six adult females in the Zoo's herd were born here, and now they are beginning to produce offspring of their own.

Sooty Mangabey Born

A sooty mangabey baby (*Cercocebus torquatus*) was born June 23 at the Monkey House (*number 21 on map*); at present, it clings so closely to its mother's chest fur that its sex has not been determined. The mother has been at the National Zoo since 1954; and, since her mate arrived in 1964, the two have produced six offspring, a number of which are thriving at other zoos.

These arboreal monkeys of West Africa have not been studied extensively, and little is known of their habits. Physically, they are remarkable examples of convergent evolution among the primates. Like some other distantly related arboreal primates, most notably the gibbons, the males have well-developed throat sacs; in the trees, where visibility is limited, it becomes important for primates to be able to keep in touch with members of their own social group and ward off members of other groups by means of the loud calls such throat sacs help produce. In addition, the mangabeys have partially developed a specialization that arboreal New World monkeys have fully developed, the prehensile tail. No Old World monkey has a true prehensile tail, but a mangabey can coil its tail around a branch to steady it while climbing.

Puma Cubs Moved to Lion House

The two puma cubs (*Felis concolor*) born at the National Zoo in May are now on exhibit at the Lion House. Unlike their uniformly tawny-coated parents (*number 22a on map*), the cubs have dark brown spots, and their tails are ringed. These markings will gradually disappear by the time the cubs are six months old. Another distinctive feature is the cubs' large, dark-colored ears, which contrast with the proportionately smaller, more typically cat-sized ears of the adults.

The puma cubs do not have an outdoor enclosure and can only be seen when the building is open. In the summer, the Lion House is open every day between 1:00 and 2:30 p.m. and between 2:30 and 6:00 on cooler days. In this species, the female alone rears the young and will not tolerate the male's presence when she has cubs with her. Zoo officials decided to remove the cubs, which were weaned and no longer dependent on their mother for milk, so that the male could return to the female puma's enclosure, from which he was removed when the cubs were born, and hopefully mate with her again.



This pair of Bali mynahs or Rothschild's mynahs were born at the Bird House (*number 5 on map*); they are located in cage 9 at the rear of the building. It is hoped that these two birds will breed. In the two photographs above they show types of behavior that Bird House officials believe are signs that they have formed a breeding pair bond.

Preening of each others' head plumes is one sign (left).

The bird on the left shows another, the characteristic bobbing display, in which the mynah throws its head back, puffs out its chest feathers, and bobs up and down on the branch (right).



Birds

Bali Mynah Breeding Success Continues

Three Bali mynah or Rothschild's mynah eggs were hatched on May 28, 29, and 30 in the indoor flight room at the Bird House (*number 5 on map*). The hatchlings developed very quickly, and after about three weeks they had left the nest and could be seen flying around the room, somewhat smaller than their parents but like them in plumage. This species (*Leucopsar rothschildi*) belongs to the same family as the common European starling (*Sturnus vulgaris*), which has become something of a pest since its introduction to North America, and the trained mynahs seen in pet stores — usually hill mynahs (*Gracula religiosa*), of which species there is a pair in the Zoo's Great Flight Cage (*number*

4 on map). But the Bali mynah is much more beautifully colored than either of these birds. Its feathers are white over the whole body, except for a pale blue streak of bare skin behind the eye, and there is a fluffy crest on the head.

By mid-July, the mother of these young had laid yet another clutch of eggs, which were expected to hatch by the end of the month. Since December, 1970, in one of the biggest continuing news stories in the Bird Division, this single pair of birds has nested ten times and reared over twenty-five young mynahs; and a new clutch of their light blue eggs — usually three in number, but sometimes four — appears in the indoor flight room approximately every six weeks. Several of their offspring are to be found in the indoor flight room. Two of them are also inside the Bird House in cage 9, and about a dozen are to be found in an outdoor cage on the east well of the building. Bird House officials are highly gratified with the success they have had in breeding these birds, which have always been confined to a limited habitat on the island of Bali and have been endangered by excessive collecting by aviculturists.

The Zoo's breeding pair build their nests in the nest boxes that are set inside the face of the large cement cliffs in the indoor flight room. There are twenty-four of these nest boxes, and the Bali mynahs have used three of them. Others have been used by hoopoes (*Upupa epops*). The nest box openings are visible as small, round holes on the cliff faces; and when a nest is being built, when the eggs are being incubated, and when the young are being fed, the mynahs can often be seen flying in and out of the nest box entrances. When they are building a nest, they can be seen carrying the materials — mostly small twigs and pine needles taken from the floor of the room — that they use to make their neat, cup-shaped nests. Several large flight features of their species of birds are placed around the edges of the nest; occasionally — perhaps accidentally — these feathers have been left covering the eggs when the parents were absent. Other, somewhat less conventional, nesting materials that have been found in Bali mynahs' nests at the Zoo include scraps of clear plastic, Polaroid camera film paper, and a mouse's foot.

If zoos are to be able to help save endangered species until adequately protected reserves are established for them in the wild, they must be able to produce offspring from parents born in captivity. None of the Bali mynahs born at

the National Zoo's Bird House have yet had offspring on their own; but there are hopes that one pair of them will soon produce a second zoo-born generation. These are the two birds in cage 9. They have already built a nest in the nest box provided for them. Moreover, they can frequently be seen engaging in behavior patterns that have been observed in the original breeding pair and are believed to be signs of pair formation. The two birds perch together frequently; they preen one another's feathers, particularly the crests; and they produce a variety of characteristic excited chattering and whistling calls. The most interesting of these behavior patterns is a display that takes place when the mynah is perched on a branch. The bird throws its head back so that the bill is pointing straight upwards, ruffles out its chest feathers, and bobs up and down on the branch.

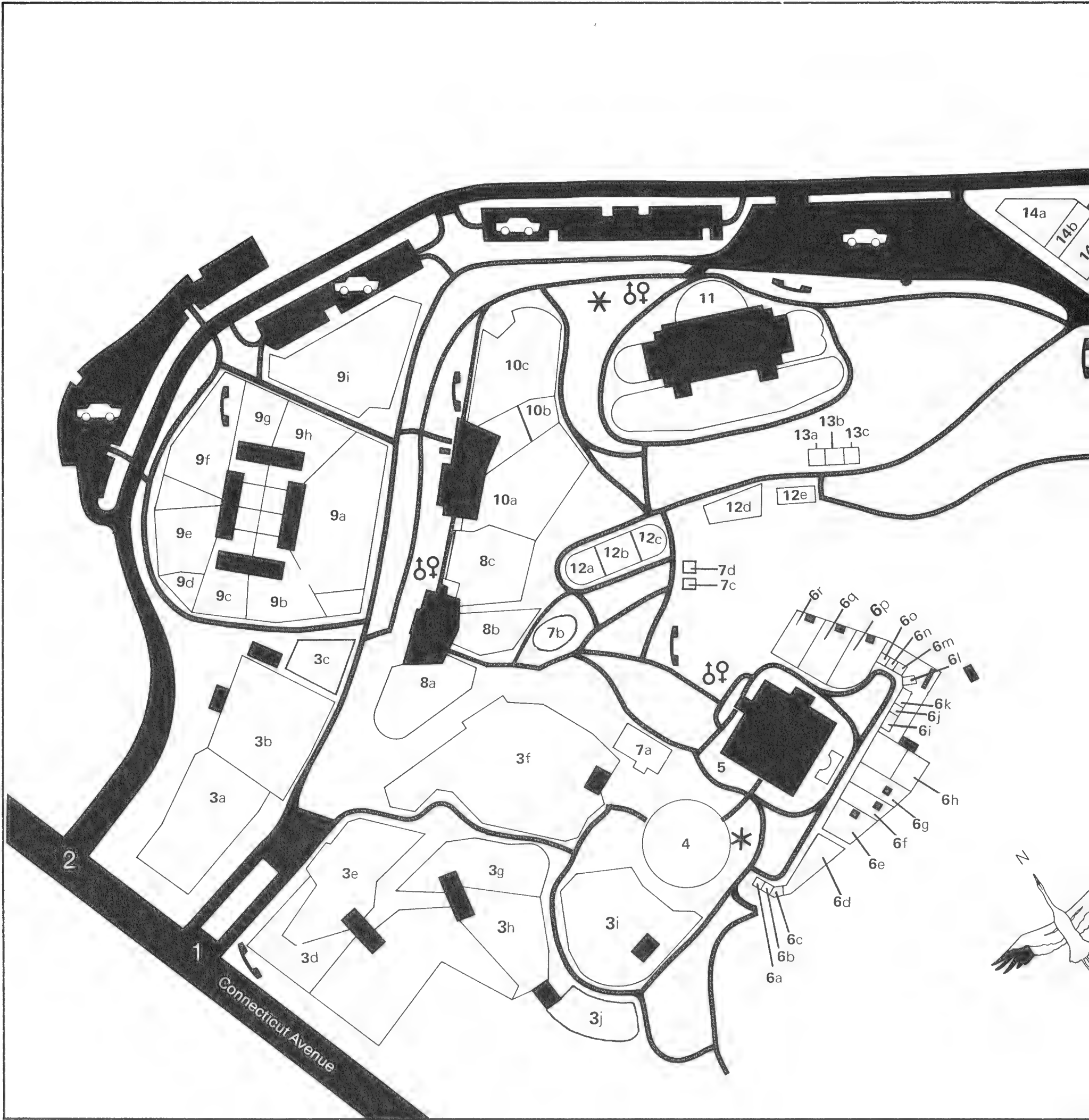
New Honeycreeper Exhibit

One of the newer exhibits at the Bird House is in cage 24, which houses three red-legged honeycreepers (*Cyanerpes cyaneus*) and two purple honeycreepers (*Cyanerpes caeruleans*). Both of these species of beautiful and active little birds are adapted for feeding on the nectar of flowers. In the wild, honeycreepers — which are also known as sugarbirds — insert their long, downcurved bills into the openings of flowers in order to feed; the tongue, which is nearly as long as the bill and has a forked tip, is used to suck up the nectar. In a zoo it is impossible, of course, to provide enough flowers to feed a cageful of honeycreepers day after day. But the Zoo's birds seem to thrive on fruit and fruit juices, which in fact supplement these birds' diet in the wild; sugar water; and mealworms, which take the place of the occasional insect captured in or around a flower by a wild honeycreeper.


The honeycreepers are believed to be related to the tanagers; like them they are New World birds. Interestingly, several other groups of birds, not closely related to the honeycreepers, have involved similar long bills and tiny active bodies in response to a similar diet. Best known of these are the hummingbirds. But there are three other groups of birds that resemble the honeycreepers even more than hummingbirds do that have evolved independently in different parts of the world. Two of these, known to ornithologists as the sunbirds and the honeyeaters, evolved in the Old World and inhabit Asia and Africa. Still


- 1. Connecticut Avenue pedestrian entrance
- 2. Connecticut Avenue vehicular entrance
- 3. Deer and antelope areas (a-j)
- 4. Great Flight Cage
- 5. Bird House
- 6. Pheasant and crane line (a-r)
- 7. Raptor cages (a-d)
- 8. Delicate-hoofed stock building (a-c)
- 9. Hardy-hoofed stock complex (a-i)
- 10. Panda House (a-c)


- 11. Elephant House
- 12. Water birds (a-e)
- 13. Hawks and owls (a-c)
- 14. Goat mountain areas (a-e)
- 15. Small Mammal Building
- 16. Lesser Pandas
- 17. Prairie dogs
- 18. Bears and monkeys (a-m)
- 19. Reptile House
- 20. Tortoise yard
- 21. Monkey House
- 22. Hardy Animals (a-o)
- 23. Lion House
- 24. Komodo Dragon
- 25. Bears (a-j)
- 26. Water animals (a-e)





- 27. Sea Lion pool
- 28. Wolves, foxes, and wild dogs (a-l)
- 29. Lesser Cats
- 30. Waterfowl ponds (a-d)
- 31. Police Station—Restrooms—First Aid
- 32. Restaurant
- 33. Picnic Area
- 34. Window Shop
- 35. Rock Creek Parkway entrance
- 36. Friends of the National Zoo Offices
- 37. FONZ Education, Editorial, and Tour Guide Offices

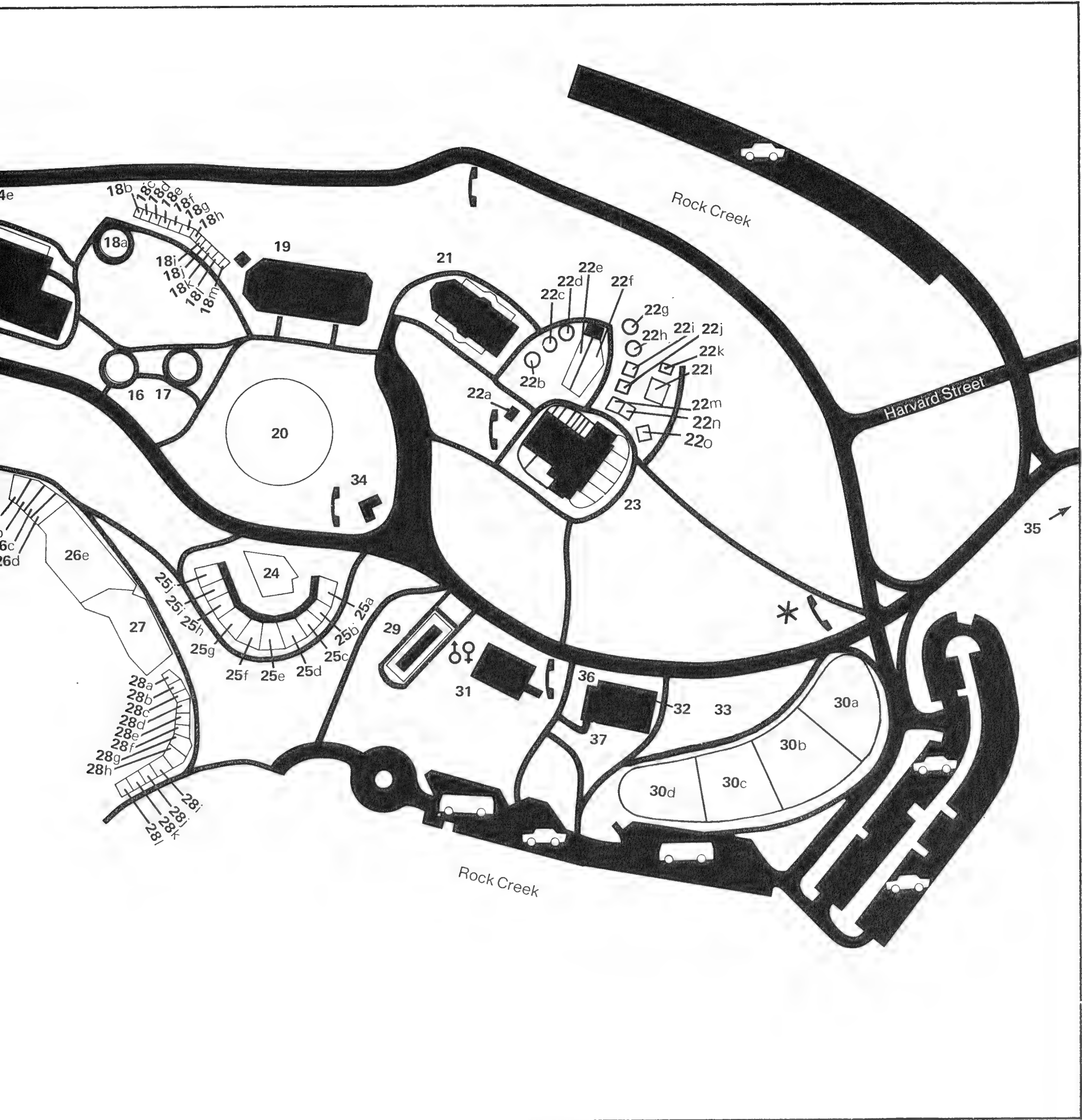

Telephone


Restrooms


Trackless Train Stops


Parking








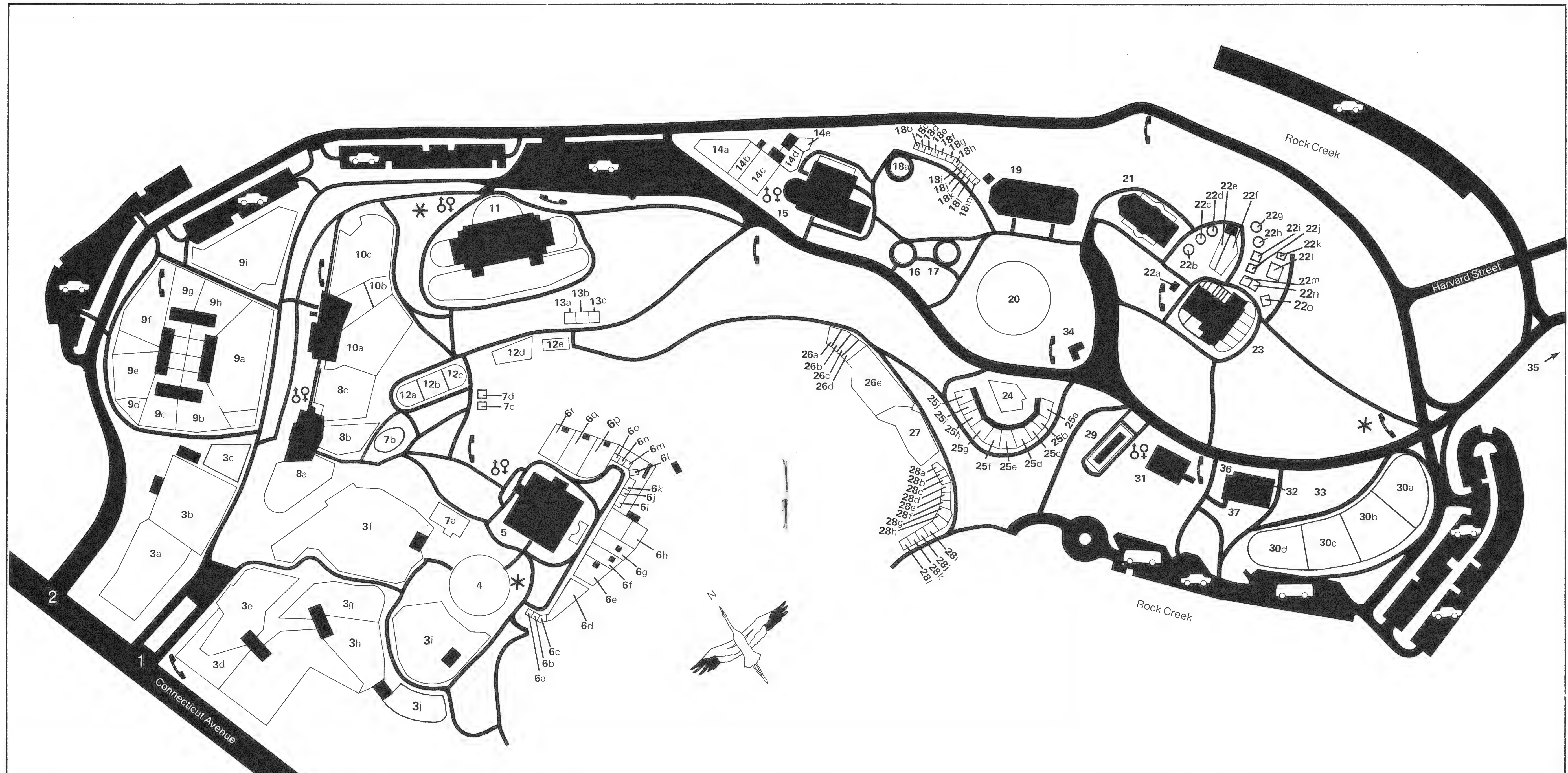


1. Connecticut Avenue pedestrian entrance
2. Connecticut Avenue vehicular entrance
3. Deer and antelope areas (a-j)
4. Great Flight Cage
5. Bird House
6. Pheasant and crane line (a-r)
7. Raptor cages (a-d)
8. Delicate-hoofed stock building (a-c)
9. Hardy-hoofed stock complex (a-i)
10. Panda House (a-c)

11. Elephant House
12. Water birds (a-e)
13. Hawks and owls (a-c)
14. Goat mountain areas (a-e)
15. Small Mammal Building
16. Lesser Pandas
17. Prairie dogs
18. Bears and monkeys (a-m)
19. Reptile House
20. Tortoise yard
21. Monkey House
22. Hardy Animals (a-o)
23. Lion House
24. Komodo Dragon
25. Bears (a-j)
26. Water animals (a-e)

27. Sea Lion pool
28. Wolves, foxes, and wild dogs (a-l)
29. Lesser Cats
30. Waterfowl ponds (a-d)
31. Police Station—Restrooms—First Aid
32. Restaurant
33. Picnic Area
34. Window Shop
35. Rock Creek Parkway entrance
36. Friends of the National Zoo Offices
37. FONZ Education, Editorial, and Tour Guide Offices

-  Telephone
-  Restrooms
-  Trackless Train Stops
-  Parking
- 



another group, the Hawaiian honeycreepers, likewise evolved long, curved bills for feeding on nectar quite independently of the honeycreepers on the South and Central American mainland.

The red-legged honeycreeper inhabits northern tropical South America on both sides of the Andes; the purple honeycreeper inhabits approximately the same region and ranges somewhat farther to the south. Both are forest birds and are said to be particularly common on forest edges. Of the three red-legged honeycreepers in cage 24, two are females and can be distinguished by their pale-green-and-brown mottled plumage. The male is deep blue over most of his body and can be distinguished from the two purple honeycreeper males, which are also deep blue in color, by the fact that he has red legs and a brilliant turquoise patch on his forehead. The purple honeycreeper males lack this patch and have black throats and yellow legs. Still it is not easy at first to tell the species of the fast-moving birds in cage 24, and matters are further complicated by the fact that the male red-legged honeycreeper outside of breeding season is said to lose his blue color and come to resemble the female.

Burrowing Owls Hatch Four Eggs

In February, when the Zoo received the second of its pair of burrowing owls (*Speotyto cunicularia*), officials were uncertain whether or not they had a male and female. Since there is no way to tell the sexes of these birds by external appearance, they simply had to wait and see. The wait was not long. In early June, five eggs appeared in the owl's burrow nest in cage 26 at the Bird House, and there was no doubt that the birds were a true pair.

On June 28 one of the eggs hatched; and though one other egg failed to hatch, on June 29 the remaining three eggs hatched successfully. At first the four owlets were scantily feathered with grayish white down. In most adult birds, the large outer feathers known as contour feathers do not grow over the entire body but only on certain areas called feather tracts; the gaps in between the feather tracts are often covered with down and are protected by the longer contour feathers. In these young burrowing owls, the down-covered parts of the body were the feather tracts, and in between the tracts bare skin was visible.

The owlets' first juvenile contour feathers soon began to grow from the feather tracts, and by mid-July their bodies were covered with grayish-brown and brown plumage. By this time, although they could not yet fly, they were quite active, leaving the burrow and running around the cage. In the wild at this age, young burrowing owls have been reported to emerge from the burrow and wait near the entrance with one of their parents. The adult bird will scan the horizon for some such likely prey as a large insect, pursue it, and return to feed the nestlings, which proceed to mob the parent bird greedily.

Later in the summer, the Zoo's young burrowing owls are expected to begin a complete moult of their contour feathers. Beginning on the sides of the breast, the back, and the wings, they will gradually lose all of their juvenile feathers and replace them with feathers virtually indistinguishable in color and pattern from those of the adult. Not only do young burrowing owls at this stage look like adults, but in the wild they must learn to live on their own like adults and search for food for themselves during the first winter of their lives.

Stanley's Crane Hatchlings

On April 18, a single egg was seen in a nest on the ground in the Stanley's crane yard outside the Bird House (*number 6r on map*). On April 23 a second egg had appeared, and the female crane had begun to incubate the two eggs, the male too taking turns at the nest. In some avian species, the female does not begin incubating until she has laid all of the eggs in a clutch, so that all of the embryos will develop simultaneously and will be ready to hatch at the same time. Stanley's crane is evidently one of these, although most cranes are said to lay and hatch their eggs a couple of days apart from each other; and both of the Zoo's Stanley's crane eggs hatched on May 21.

The hatchlings' downy feathers were gray on their bodies and tan on their heads. Only one one-hundredth of their parents' weight, they were nonetheless quite precocious and were able to leave the nest and follow their parents around the enclosure soon after hatching. Since then they have increased rapidly in size and are about half as large as their three-foot-tall parents; but they will keep their downy plumage all summer. The parents are still very much on the defensive; and when a Zoo visitor



Stanley's crane parent and offspring at the National Zoo (*number 6r on map*).

approaches their enclosure, one or both of the parents may run towards the front, watch the visitor's movements closely, and sometimes stab with its long, sharp bill through the chain link fence, evidently attempting to drive away what to the cranes seems a potential threat to the safety of their young.

This is the fourth summer in a row that this pair of cranes have bred. Their first pair of offspring are currently located in the bongos' enclosure (*number 3f on map*). The next year, they produced a single young, which has been sent to another zoo. Last year they again produced two young, which are also located in the Bird House area (*number 6p on map*), sharing their enclosure with a

crowned crane (*Balearica pavonina*) that was hatched at the National Zoo.

The blue crane or Stanley's crane (*Anthropoides paradisea*) is native to South Africa, where it is fairly common in open country. It is at present one of the more fortunate of the world's fourteen crane species. The whooping crane (*Grus americana*) of North America is only too well known for its heroic battle against extinction, and several other members of this family are in nearly as great danger. In fact, none of these magnificent birds can be considered safe; hunting and human encroachment on their breeding grounds are reducing the numbers of every crane species each year.

Reptiles and Amphibians

Jeweled Lacerta

The lacertids are an interesting family of Old World lizards, distributed throughout Africa, Asia, and Europe. They are the common lizards of the latter continent; in fact our word lizard is derived from the word *lacerta*, by which the Romans knew these lizards. Now four specimens of one of the most distinctive species in this group, the eyed lizard or jewelled lacerta (*Lacerta lepida*), are on exhibit at the National Zoo's Reptile House. Found on the Mediterranean coast of France, throughout Spain and Portugal, and in North Africa, these lizards are named for the brilliant green whorl pattern on their dark brown

backs and the row of blue dots on the sides of their bodies, which have struck fanciful herpetologists as resembling jewels or eyes.

Some authorities state that this species may reach the largest size of any of the lacertids. Certainly it is not uncommon to find jewelled lacertas as long as eighteen inches, including the tail, which makes up two-thirds of the total length. Lengths of two feet have sometimes been reported. The Zoo's specimens are all less than a foot long at present; but this species usually does well in captivity, and they can be expected to increase in size over the years.

In the wild, these lizards live mainly on the ground in open country, but may climb in the lower branches of such trees as olives in search of insects, which are their principal food. They conceal their seven to ten eggs in the hollow bases of olive trees or in rotting logs.



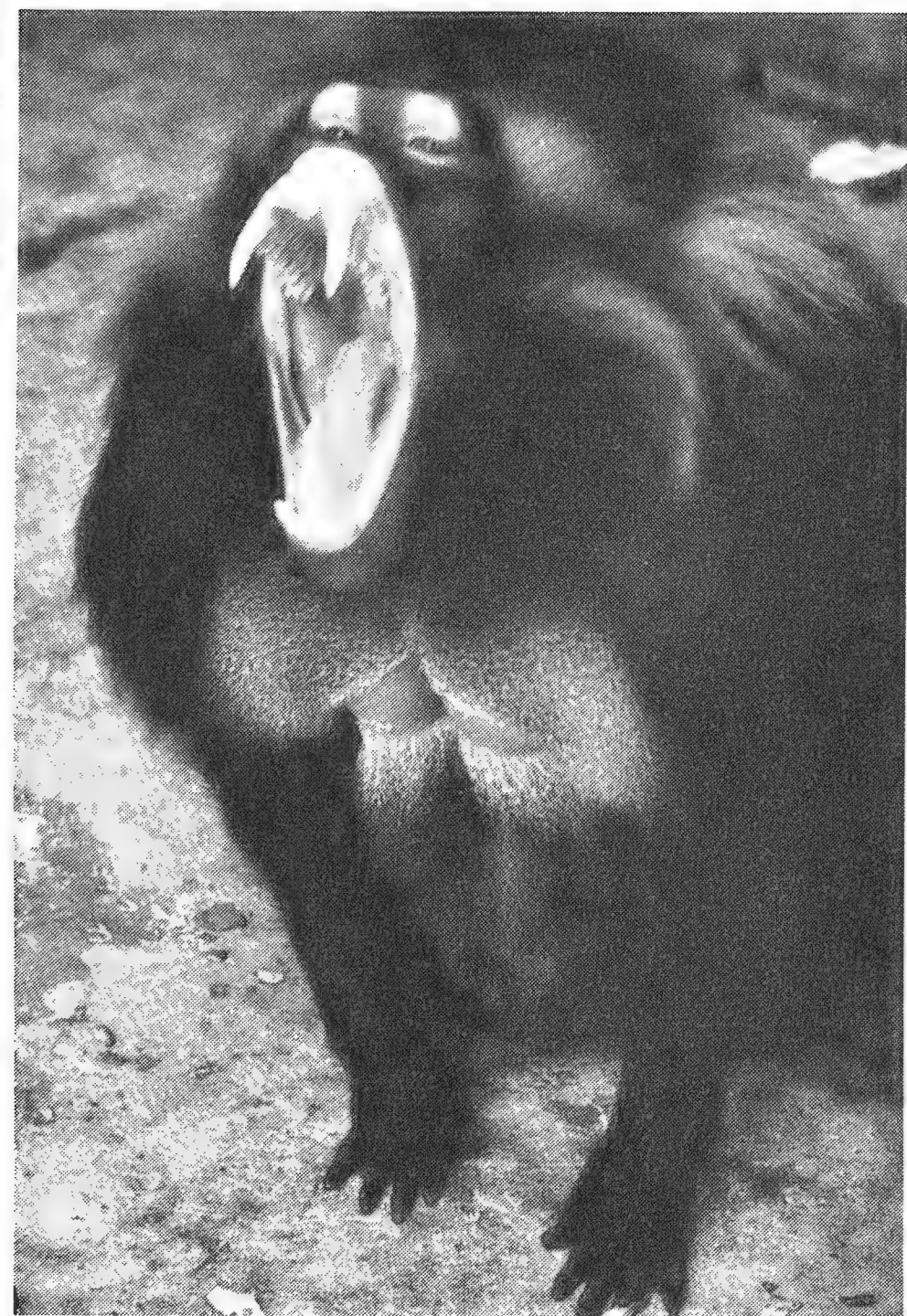
One of two new Asiatic horned frogs (*Megophrys nasuta*) at the Reptile House (*number 19 on map*).

Asiatic Horned Frogs

Also new at the Reptile House are a pair of Asiatic horned frogs (*Megophrys nasuta*). The species name *nasuta*, meaning "long-nosed," refers to the long projection of skin on the tip of these frogs' snouts, while the English name is derived from the even more unusual "horn-like" projections over the eyes. These frogs' coloration is also quite distinctive. They are buff-colored on their backs, pinkish on their legs, and rich chocolate brown on their undersides, and their toes are also striped with chocolate brown.

These frogs' eyes, by their large size and their vertical pupils, indicate their nocturnal habits in their native Malaya.

This species belongs to the same zoological family as our Eastern spadefoot toad (*Scaphiopus holbrooki*); unlike the spadefoot, however, it is not a burrowing species but lives among leaves on forest floors. The Asiatic horned frog has a bony plate in the skin of its back, so that it can protect itself by rapidly digging into the leaves, leaving only this armored area exposed.



Gelada Baboons

The Zoo's male gelada bares his formidable teeth, warning the photographer to keep his distance (*number 221 on map*).

Gelada baboons are striking looking monkeys, and in several ways their appearance is unique. The hairless patches of vivid pink skin on the chests and throats of both sexes immediately set them apart from all other monkeys. This skin, which in the female is edged with blister-like growths and becomes bright red at the fertile phase of the menstrual cycle, has earned this species the popular name "bleeding-heart baboon." In males, which are twice the size of females and may weigh a good 45 pounds, the straight black and brown hair forms a long mantle on the shoulders and back, and the lighter-colored hair around the face forms characteristic wispy whiskers. Still other distinctive features are the long tufted tail and the marked contrast between the pale pink skin around the eyes and the black skin of the face. The area around the eyes is particularly noticeable when the monkey raises its eyebrows, as it does when alerted by some new stimulus in its surroundings.

Gelada baboons belong to the genus *Theropithecus*, in which there is only one species, *Theropithecus gelada*. They are not true baboons, which are classified in the genus *Papio*; and the gelada baboon's jutting chin and flat face clearly differentiate it from the baboons with their long, "doglike"

snouts. In fact a better popular name for this species would be simply "gelada"; according to the German explorer and naturalist Ruppell, who in 1835 first made this species known to science, the Amharic inhabitants of its native regions called it "Tschelada." "Baboon" was doubtless added to the name because, like the true baboons, geladas are large terrestrial monkeys of the African continent. Now some scientists believe they are more closely related to the guenons, while others have suggested that they are relatives of the macaques or the mangabeys. But whatever their exact position in the primate family tree, geladas have aroused considerable interest in recent years because of their unusual habitat and the kind of social life they have evolved in response to it.

Gelada baboons live only in mountainous parts of Ethiopia, where elevated tableland that reaches a height of 15,000 feet above sea level is cut by deep gorges. The geladas inhabit the precipitous edges of these gorges between 6,000 and 15,000 feet and the rim of the tableland above. In this rugged country, geladas search for roots, bulbs, grasses, and other vegetable matter, occasionally supplementing this diet with small quantities of insects. Their unusually long and

sharp fingernails are helpful in digging for roots in the hard mountain soil.

Their fingernails also come in handy in climbing over steep rocks. One captive gelada was able to climb over 15 feet up a tile wall with the cracks between the tiles carefully filled in and its fingers providing the only foothold. The gelada is a slow and cautious climber. Unlike arboreal monkeys, it does not aid its climbing with jumping ability, and it is said that a fall of only ten feet may prove fatal.

In the gelada's native habitat, there is a dry season from September to June, broken only by a short period of occasional light showers in April; then even the gelada's meager fare is scarce. Around February, the temperatures may become quite cold at night, and frost may appear on the ground before dawn, while hailstorms may accompany the April rains. At these times and in the summer rainy season, the gelada's long fur shows its value as a protection against cold and wet.

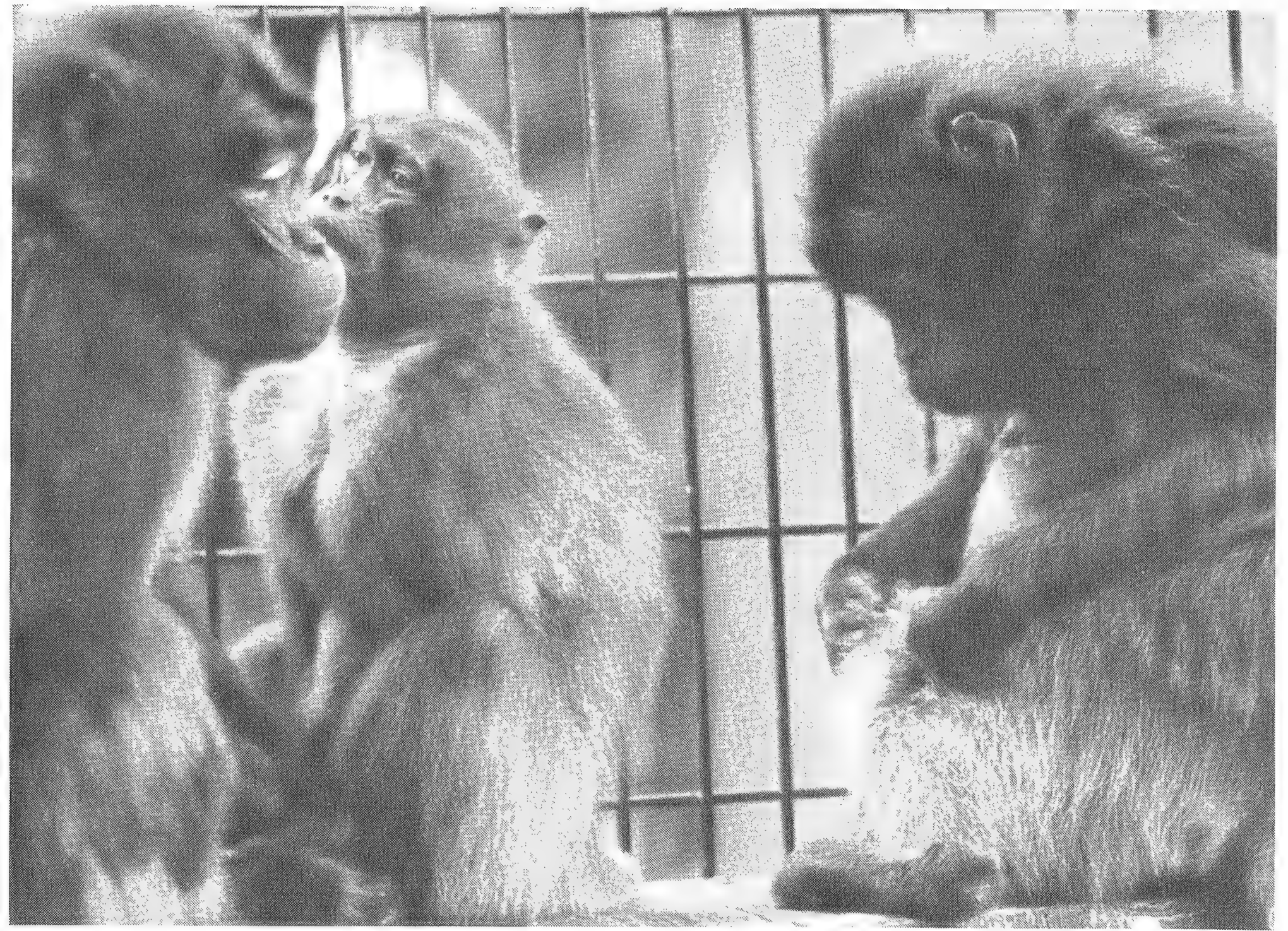
The gelada's social life is an adaptation to the conditions under which it lives and shows seasonal variations that correspond with the seasonal variations in rainfall and the availability of food in its habitat. In the rainy season, lush mountain meadows develop, and food is plentiful. Then the geladas congregate in herds numbering up to 400. In the dry season, when food is scarce, the herds separate into much smaller groups, each of which forages for itself. In parts of the gelada's range that are near human settlements, large herds also form around cultivated fields to plunder the crops that are beginning to grow there; and at harvest time in February, when the soil is baked hard and natural food is hard to find, the monkeys gather in considerable numbers around the villages, searching threshing floors for leftovers.

While feeding under more natural conditions, the herd travels up and down the sides of the gorges or along the rim of the gorge on the flat land above. When browsing on the flat ground, the herd never ventures more than a mile from the gorge, and its organization indicates a constant awareness of the presence of the shelter the gorge cliffs provide. The most vulnerable members of the herd are located nearest the cliffs; there groups of infants and small juveniles feed and romp together, interspersed with mothers with babies and other adult females. Further from the cliffs, there are females and mothers with young, with an occasional adult male among

them. Still further out the proportion of males increases until at the forward edge there are only full-grown and large, nearly full-grown males. At night, the herd returns to the cliffs to sleep.

The daytime movement is slow, and the whole herd is hardly ever moving at once. For intervals of one or two hours, the herd may remain in one place. Usually they are feeding; but the young may also play, and, in the early morning and late afternoon, the adults may groom one another's fur. Eventually a few monkeys, usually in the male section of the herd, will get the others moving by standing up on all fours and striding forward for about 300 yards. Then, as the other members of the herd one by one catch on, stand up, and move an equal distance, the males that originally started the movement will have sat down again and resumed feeding. Sometimes a male may move a much shorter distance, sit down for a shorter interval, and move on a short distance again. Other animals may follow him and stop to feed when he stops to feed, while other monkeys throughout the herd are also moving in a similar sporadic fashion. The effect of this is a very leisurely forward movement of the whole herd. Other geladas will not pass a monkey that has stopped, but there are no real leaders. First one male and then another may take it upon himself to get the herd moving. Only occasionally, usually late in the day when the geladas are in a hurry to return to the cliffs for the night, does the herd move without pausing; their progress at such times is said to resemble a forced march.

Until midday the herd moves away from the cliff ledges where it has passed the previous night. The distances traveled seem to vary with the locality and the time of day. Geladas that gather around villages at harvest time travel little, but under the natural conditions of the mountain grasslands, there is reported to be a fairly regular daily pattern of movement. One herd traveling along the tableland would progress three miles from its sleeping cliffs before midday and one and a half miles in a reverse direction when returning to the cliffs in the latter part of the day. Thus, they did not return to the previous night's sleeping place, but slept a considerable distance along the gorge; but after a few days they began to progress back towards their original starting place. Often herds seem to travel about three days in one direction and then return for three days. Sometimes on these travels, smaller groups will detach themselves from the herd and be left behind.



The Zoo's two adult female gelada baboons and the young female born here in 1970.

The arrangement of monkeys in the herd is deceptive, since it does not reflect the true structure of gelada baboon society. Close observation has shown that the herd is not in fact an integral social unit, and that it lacks any centralization or permanent over-all structure. Rather the herd is a temporary congregation of smaller groups, and it is these smaller groups that are the real gelada societies. The basic gelada social unit is composed of a full-grown adult male, one or more adult females, and their young. Such one-male groups are the basic breeding units in this species. In addition, there are similarly sized "bachelor" groups composed entirely of males, including both young males that are nearly fully grown and some fully grown males, most of which are probably elderly. As they approach full growth, male offspring are expelled from the groups in which they were born and join bachelor groups. This apparently takes place at the age of five or six years.

When the larger herds break up in the dry season, each of these basic groups remains a unit. A one-male group or bachelor group may forage entirely by itself at such times or, more frequently, may join in a small herd

with one or two others. But even in the larger herds, each of the constituent groups reveals itself as a unit. There geladas interact mainly with members of their own groups; and, although males and young may move away from other members of the group while feeding or resting, they periodically rejoin them and probably always do so before going to sleep. When the whole herd moves quickly, each group tends to reassemble. Moreover, sexual contact seems to take place only between members of the same group; and the grooming of one another's fur — one of the most important and time-consuming of primate social activities — likewise does not seem to cross group lines.

The gelada's form of social organization contrasts markedly with some of the most publicized primate societies. In some of the true baboons (the savannah baboon, *Papio ursinus*, for example), in the rhesus macaques (*Macaca mulatta*) and in the Japanese macaques (*Macaca fuscata*) — all of which have been studied fairly extensively — there exist large troops including numerous adult males and females. In these species, the troop, which usually numbers from about 20 to about 175 individuals, is an organized, highly co-

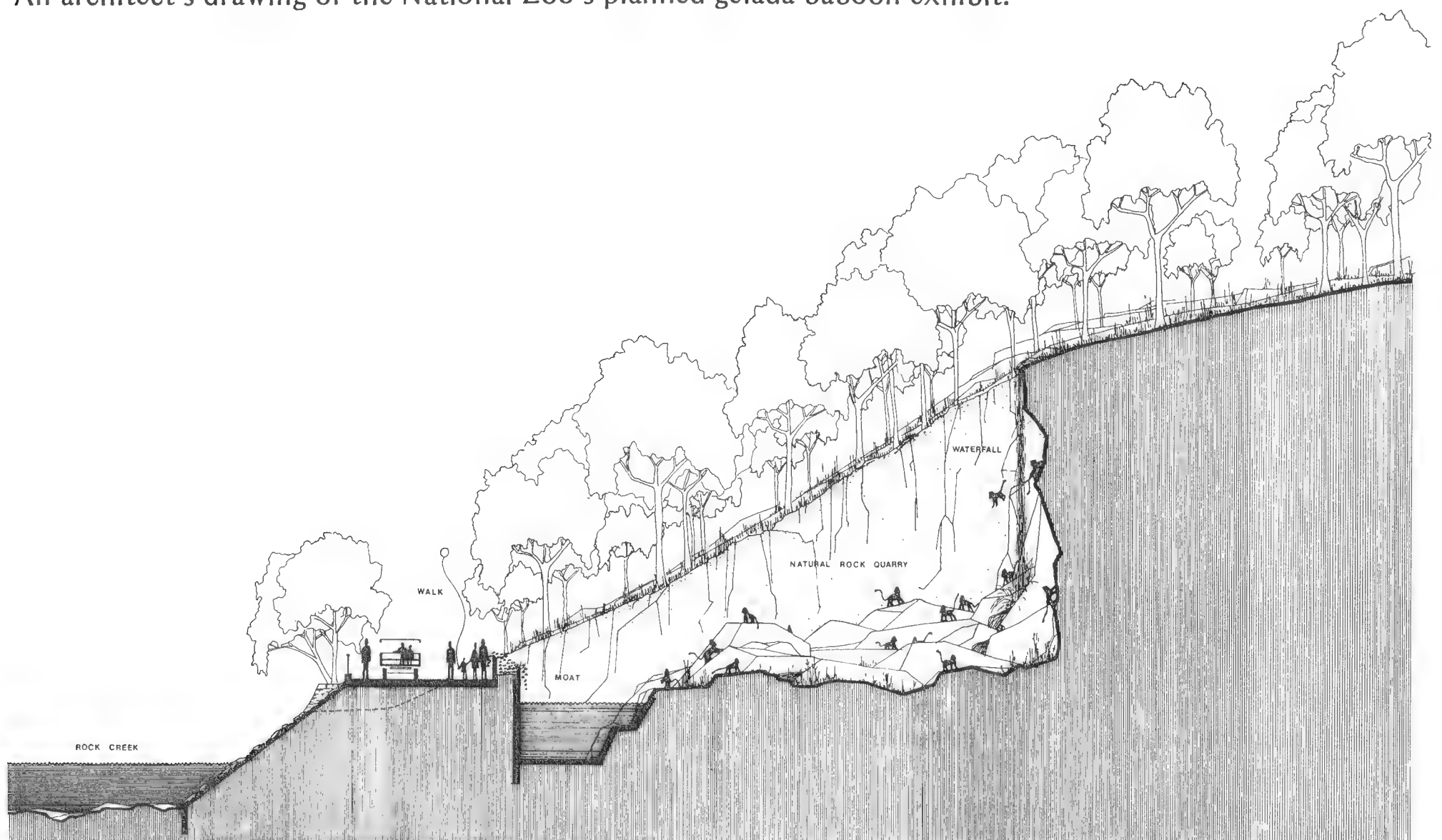
hesive unit. It is led, protected, and ruled by a group of adult males. These males travel at the center of the troop in the company of females with infants, while less dominant adult males, larger juvenile and sub-adult males travel on the periphery of the troop. To a greater or lesser extent patterns of dominance and subordination permeate these societies. There is a marked hierarchy among the males on the periphery of the group; the members of the ruling male clique are less noticeably ranked among themselves, and there is a similar ranking among females. More dominant individuals have priority in disputes over such things as food and favored sleeping places, and dominant males have first choice of females in the breeding season. In one Japanese macaque troop a clear-cut hierarchy was observed according to which every single member of the troop was ranked, from the first to the fortieth.

In many species, on the other hand, the largest groups that are ever found together consist of one adult male, several adult females, and their young; and males approaching adulthood are driven away from the troop by the father. Indeed it is from this basic social form that more complex Old World monkey and ape societies are believed to have evolved. In some species it has developed to the point where the young adult males are allowed to remain with

the troop and ranked on the basis of age. In only a few species it has been replaced by the highly-specialized multi-male troop that occurs in some baboon and macaque species. In the gelada it has remained the basic social unit, but the nature of the gelada's habitat has made it necessary for such groups to come together at certain times of the year in order to take advantage of a food supply that is abundant in a few places but not widely distributed. Typically, the one-male primate group, like more complex primate groups, has its own territory and avoids mixing or contact with other groups of the same species; but this tendency to remain separate is something that the need for survival has forced the gelada group to overcome.

When the multi-male troops of baboons and macaques were first described, they gave rise to a great deal of anthropological speculation. Here, it was proposed was a close parallel of our earliest near-human ancestors. A strong dominance hierarchy, it was theorized, inevitably arises to prevent conflicts when a large number of primates are gathered together. Such theories in turn were used to support a very ancient human self-image, which portrays man as innately rapacious and aggressive, doomed to continual conflict with his fellows unless restrained by a strong authority. The evidence from gelada baboons and several other species has tended to restore balance to

An architect's drawing of the National Zoo's planned gelada baboon exhibit.



the picture and has taught us that primates display considerable variability in social structure. Today zoologists examining the roots of primate society prefer to emphasize how each form of social organization has evolved in response to environmental pressures and avoid positing such undemonstrable quantities as innate aggressive instincts.

Within the gelada one-male group a dominance ranking can be observed. The male is the unquestioned ruler, and his females have a descending order of dominance among themselves. In the National Zoo's gelada group (*number 221 on map*), which in essence has the same composition as the breeding unit in the wild, the larger of the two adult females is noticeably dominant. Observers determine the dominance order on the basis of conflicts or "agonistic encounters." One individual is said to be more dominant than another individual if it wins more conflicts than the other. The word "win" may be misleading here, since it must be understood in a somewhat specialized way. Actual fighting is rare, and almost all conflicts consist of only a brief display of aggressive or defensive signals on the part of the participants, and the loser's abandonment of the piece of food or favored resting place over which the conflict arose. If the conflict involved a "police action," the loser is forced to cease aggression against a third animal.

The last-mentioned type of conflict is the one in which the male most often figures; an important part of his role as patriarch consists of settling quarrels between other group members. Once in the Zoo's group the juvenile female was playing on the high bar, and suddenly jumped down on the ground very close to where her mother (the larger of the two females) was sitting. Startled, the adult female stood up on all fours, screamed, and bared her teeth at the juvenile, who scurried away up the bars of the cage. No sooner had she done so than the adult male charged the female, struck at her with his hand, and bared his teeth. She got out of his way, her teeth bared, then sat down and whimpered for a minute or two; soon she was calm and seemed to have forgotten her original aggressive intentions towards the juvenile.

The baring of the teeth is the most striking of the communicatory signals that accompany agonistic encounters in the gelada. No one who sees a male gelada's threatening expression is likely to forget it; the jaws are opened wide, and the upper lip is raised high or

turned inside out, exposing the upper gums and teeth, including the immense pair of canines. When the lip is curled over, its movement is visible at a distance as a distinct pink flash, and the expression is held for more than a second. In captive geladas this expression is often directed towards unfamiliar humans that approach the cage too closely; in this case, the intuitive explanation that the male is "showing his teeth" is essentially correct.

In all these cases we might tend to explain the baring of the teeth as a warning on the part of a threatened or subordinate animal that it is capable of defending itself. But the same expression has other uses for which a simple intuitive explanation will not work. It may be used, for instance, by a more dominant animal to reassure a subordinate, often when the subordinate monkey seems about to flee at the approach of the more dominant one. In fact it may be used as a response by a more dominant individual to this same expression on the part of a subordinate. Thus, when both of the Zoo's two adult females were baring their teeth and screaming at the male, he calmed them by backing away from them and briefly curling up his lip to bare his own teeth. Two geladas may bare their teeth as a "greeting" when approaching each other, and this facial expression is frequently followed by such amicable social activities as huddling close together or mutual grooming. In fact many believe that the human smile has evolved from the same sort of defensive and conciliatory baring of the teeth.

Even when an adult male gelada bares his teeth towards an aggressor of a different species, the expression is not likely to be directly followed by an attack. There is another facial expression that does precede and signal attack, whether on a member of a different species or another gelada. In this expression, the corners of the mouth are brought forward so that the mouth opening forms a wide circle, and the lips are tensed and pressed against the teeth. Often the teeth are not visible, but in the male the tips of the canines may appear just beyond the upper lips. This display is accompanied by the erection of the hair on the back and shoulders. In the male, with his long mantle, this makes the animal appear larger and considerably enhances the formidable impression on the aggressor. In a situation of high tension when it has equally strong impulses to flee and to attack, a gelada may alternate this expression with the bared-teeth display.

As in other primates, vocalizations play an important role in gelada communication, and the gelada's repertoire includes some of the most unusual sounds produced by any monkey. Besides the typical monkey screams and "panting barks," geladas are capable of producing some truly unearthly moaning and sobbing calls. One moaning sound seems to function as a contact call; when a moment of danger or tension has passed, members of the Zoo's group make this sound in chorus, evidently to reaffirm their group identity and reassure one another that no one is missing.

Body movements too have communicatory significance. One of the most commonly observed body movements in the gelada baboon, as in many other Old World monkeys and apes, is what is known as "presenting" or "presentation." This is the typical posture of a female soliciting sexual intercourse, but it has come to play a role in many social contexts in which the sexual element is subordinate or entirely absent. In the gelada baboon, a female often may present towards another female or towards a male in a clearly non-sexual context. Often a female uses presentation to appease aggression or anticipated aggression on the part of another female. The same gesture sometimes occurs before grooming. A female may present in order to ask another female to groom her or in order to indicate her intention to groom the other female.

When a female presents towards a male in a non-sexual context, it likewise often has the purpose of appeasing aggressive impulses that the male has expressed. Sometimes also a female may do so to solicit the male's protection when she has been threatened by another female. Sometimes the male may signal to a female — by smacking his lips or chattering his teeth — to come over to him; and when she does so, she may present towards him. Finally, a female may present towards the male of her own accord without any apparent motivation except perhaps as an affirmation of her submissiveness towards him.

The male may react towards non-sexual presentation by the female by sniffing at or touching the female's anogenital region or by seizing the fur on her hips with both hands. He may mount her without sexual intent; mounting in fact occurs in a variety of non-sexual contexts. A female may even mount another female in a way that mimics male sexual mounting. Just as presenting, the female sexual gesture, in its non-sexual uses

signifies submissiveness or at least the lack of aggressive intent, the male sexual behavior pattern in general seems to function as an assertion of dominance.

In Old World monkeys and apes with multi-male social groups, males regularly mount one another and present to one another as social signals. Such behavior does not seem to occur among gelada males; and this is in keeping with what we know of their social life in the wild, since presenting and mounting among males are ways in which male dominance hierarchies express themselves. In captivity males of some species will present submissively to human beings; the Zoo's male pig-tailed macaque (*Macaca nemestrina*) frequently does so. Males of this species have a peculiar greeting gesture in which the lips are protruded and the chin is jerked upward; this gesture is not difficult for human beings to imitate. When a visitor approaches the pig-tailed macaques' cage (*number 22c on map*), particularly if there are no other visitors in the area, the male will sometimes give this greeting. If the visitor responds in kind, the male may turn and present submissively, usually holding one hand on his hip as he does so and looking back over his shoulder.

In the pig-tailed macaque and some other Old World monkeys — such as the Celebes ape (*Cynopithecus niger*), a pair of which are located at the Monkey House (*number 21 on map*) — the male's hindquarters are very brightly colored — a phenomenon which puzzled zoologists for some time. Recognition of the social function presentation plays in many species, however, has helped provide some tentative solutions.

In many species, the female's anogenital region shows cyclic color changes. In several species, including both the pig-tailed macaque and the gelada baboon, the skin in this area becomes rich with blood and bright red at the fertile phase of the menstrual cycle. In the Barbara ape (*Macaca sylvana*) by contrast, the fertile phase is marked by a noticeable swelling but not by color change (*numbers 22b, 22d, 22g, and 22h on map*). It is at this time, when females are in estrus, that most sexual activity occurs, and here the original meaning of presentation becomes clear. Not only is presentation an invitation to intercourse, but it is a way of showing the male the female's sexual skin change and indicating to him her fertile condition.

Now the bright hindquarters of the male pig-tailed macaque and of males of other species bear a marked resemblance in

Future Plans

for the members

increased discounts at
the Window Shop and
kiosk
free trackless train tick-
ets annually
special seating area at
the Zoo Restaurant
friends reading room/
reference library at the
Zoo
tours of World's wild-
life areas and zoologi-
cal parks
special Saturday morn-
ing Zoo tours and
brunches
Zoo classes for members
and their children

from the membership

special zoo education
programs for nearby
school systems
recycling collection
points in the Zoo's
parking lots
various conservation
projects on behalf of
the world's dwindling
wildlife
Special education
programs for the blind

To Become a Member

in the Friends of the
National Zoo

Fill in and mail this form to: the Friends of the National Zoo at the National Zoological Park Washington,
D.C. 20009

With a check (made out to FONZ) \$3.00 of which is for your subscription to 'THE ZOOGOER'

☐ \$7.50 for an individual membership ☐ \$15.00 for a family membership

Name _____

Street address _____

City, State, & Zip Code _____

Telephone number _____

For further information please call 232-4500

Also please contact me for volunteer work as:

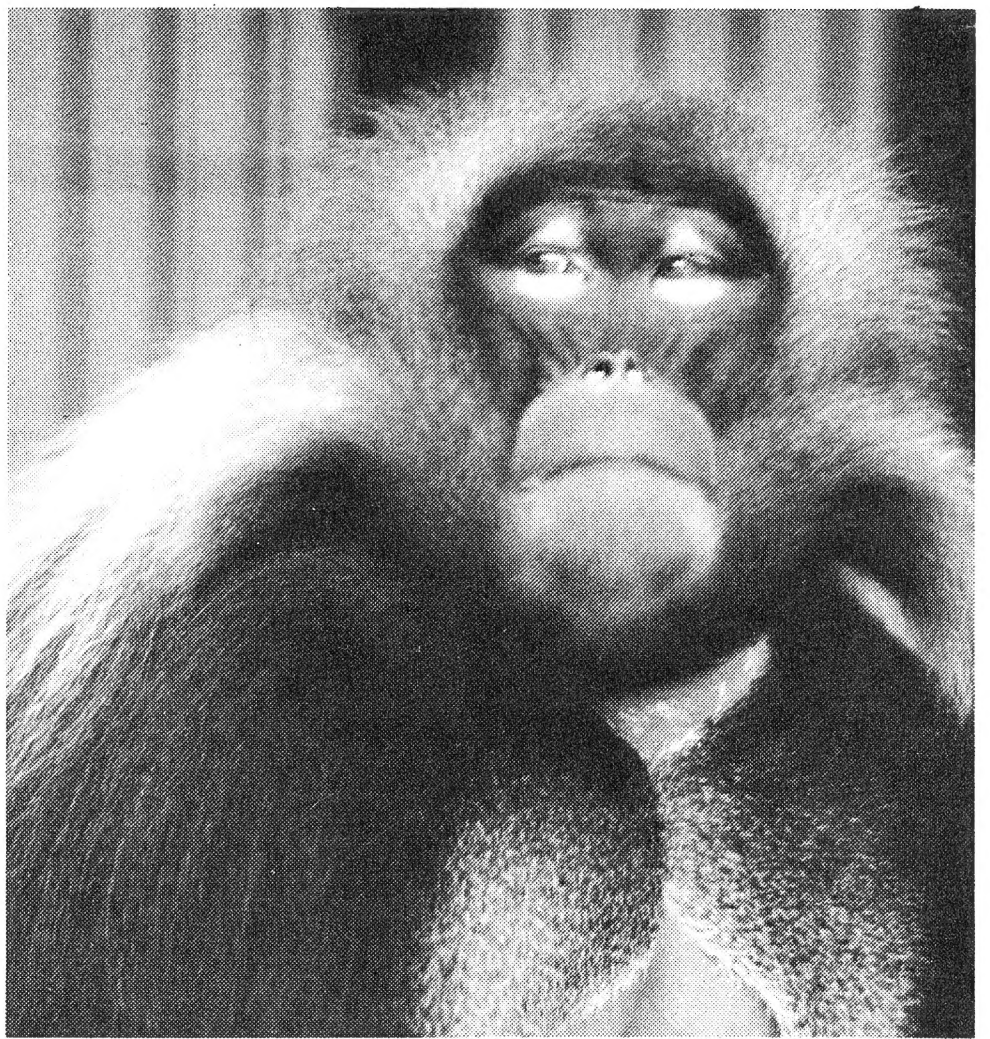
- ☐ a Tour Guide for school groups
- ☐ a PregWatcher for Zoo animals
- ☐ a Sales Clerk at the Window Shop
- ☐ an office worker for mailings, typing, etc.

Mr H for Pres
Box 100B
Wash D.C.

coloration to those of females in estrus. Yet the colors are not produced in a homologous way; the red pattern on the male pig-tailed macaque's hindquarters is not produced by skin at all but by red-pigmented hairs. Thus it has been theorized that the coloration of the male's hindquarters represents a kind of mimicry of that of a female in estrus. Since presentation towards the male by a female in estrus has strong connotations of submissiveness on her part and rapidly and effectively curtails any aggressive tendencies the male might have towards her, it is argued that a similar signal in the male has evolved to elicit a similar abandonment of aggression on the part of other males.

The gelada male, it will be noticed, is quite without any such coloring of the hindquarters, but some scientists have believed that a still more remarkable instance of mimicry is to be found in this species. It has been suggested that the bare skin on the chests of both sexes duplicates the sexual skin of the female's hindquarters. The bare skin in both areas is quite similar in shape, and the chest skin of the female shows cyclic changes that correspond closely with the cyclic changes of the anogenital skin. Both become bright red at the fertile phase; and as menstruation approaches, the bright color in both areas is replaced by a pale pink. Both areas in the female are ringed with blisters which become enlarged as menstruation approaches.

Until further studies are made of the gelada's social life in the wild, the function of the bare chest skin in either males or females cannot be determined for certain. In the female it seems to be a secondary means of signalling the fact that she is in estrus. But it is entirely possible that in both sexes the chest skin functions as a social signal quite apart from its sexual functions in the female. Like the brightly colored hindquarters of the males of other species, it may function to calm potential aggressors by mimicking female sexual presentation. That a signal pattern could develop in a different part of the body from the pattern it is imitating and yet elicit something of the same response may seem surprising; but it is easy to imagine how such a pattern could have actually been deceptive when it first appeared and how it would have had considerable survival value for its possessors if it saved them from aggression by others of their species.



The National Zoo's adult male gelada baboon (number 221 on map).

There are reports of (presumably captive) male geladas "threatening" each other by displaying their chests, and the bare skin is even said to grow redder on such occasions. If these reports are accurate, it is easy to see how the male's chest signals may function to inhibit each other's aggression. Indeed, if one wonders how each adult gelada male, the ruler of his own small group, is able to coexist peacefully with a great number of other strange males in the herd, it may be that the constant presence of a familiar appeasing signal on the chest of every male serves to inhibit any aggressive impulses on the part of the others. In the case of the female, the chest skin may play a similar function. In fact, it may have evolved so that the anogenital region would not be involved in appeasing signals towards members of other groups, particularly other males, thus minimizing the danger of intergroup sexual contact and consequent male quarrels.

The National Zoo has plans for exhibiting this fascinating species on a much grander scale in the future. When the Zoo's Master Plan is implemented, a gelada baboon exhibit will be constructed on natural cliffs above Rock Creek in an area of the Park not currently occupied by animal exhibits. The situation on much of the Ethiopian tableland will be reversed, since the geladas will climb down from the cliffs onto a flat enclosed area below; but when the area is occupied by an expanded gelada troop, visitors should be able to see a great deal of natural behavior in an attractive and realistic approximation of these monkeys' native habitat.

